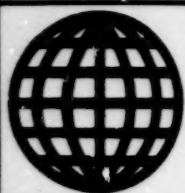


JPRS-TND-88-018
11 OCTOBER 1988



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JPRS Report

Nuclear Developments

Nuclear Developments

JPRS-TND-88-018

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National Nuclear Corporation Set Up
OW1609101988 Beijing XINHUA in English
0939 GMT 16 Sep 88

[Text] Beijing, Sep 16 (XINHUA)—With the approval of China's State Council, the China National Nuclear Corporation has been set up, the corporation's spokesman Li Yingxiang announced here today.

Based the former Nuclear Industry Ministry [as received], the new corporation, having more than 200 enterprises, companies, and research and design institutes under it, is an economic entity with a status of a legal person and will operate independently, responsible for its own profits and losses.

The establishment of the corporation, Li said, will promote the country's development of nuclear energy and speed up the construction of nuclear power plants and the shifting of nuclear industry from military to civilian use.

In addition to production, operation, and scientific research and development related to nuclear industry, the corporation will undertake part of the government management work authorized by the Ministry of Energy resources.

The corporation's business scope covers the organization, construction, and operation of nuclear power plants, and the prospecting for and mining of related mineral resources.

It will be responsible for the production of nuclear fuels, uranium products, radioactive isotope products and nuclear instruments; disposal of used nuclear elements and wastes; and application of nuclear radiation technology.

Li said the corporation will also undertake basic and applied research related to nuclear technology and the development of nuclear energy and other high technology.

It will also conduct economic and technical cooperation with other countries, Li said, adding that it will be engaged in the import and export of civilian-use nuclear equipment, technology exports, and labor service.

Li said his corporation will continue undertaking research, development, and production of military products.

The corporation is now constructing the 300,000-kilowatt Qinshan Nuclear Power Plant in east China's Zhejiang Province and the 1,800,000-kilowatt Guangdong Nuclear Power Plant.

Nuclear Industry Corporation Established
HK1709050888 Beijing CHINA DAILY in English
17 Sep 88 p 2

[Article by staff reporter Jiang Xiaoyun]

[Text] The China Nuclear Industry Corporation has been set up to promote the exploitation and application of nuclear power and to speed up the transfer from military to civilian production, a corporation spokesman declared.

The corporation, based on the former Ministry of Nuclear Industry and administered by the Ministry of Energy Resources, is not answerable to the State planning authority with regard to production and finance. Its 200-plus enterprises and institutions are responsible for their own profits and losses.

The Ministry of Energy Resources has given the corporation control over the following management functions:

- To co-ordinate the work on nuclear electricity construction by raising funds and granting loans at home and abroad.
- To manage radioactive mineral resources throughout the country and to prospect and exploit mineral resources.
- To manage all products related to the nuclear industry and promote the manufacture of products for civilian, as opposed to military use.

International Inspection of Nuclear Facilities
OW2009032188 Beijing XINHUA in English
0251 GMT 20 Sep 88

[Text] Vienna, Sep 19 (XINHUA)—China has agreed to submit its non-military nuclear facilities to international safety inspection, Director General Hans Blix of the International Atomic Energy Agency (IAEA) announced today.

The signing of the agency's "safeguards" agreement by China today means that IAEA experts can now inspect the non-military nuclear programs of all known nuclear weapons-possessing states.

Under the 1969 nuclear non-proliferation treaty, the five known nuclear powers pledge not to share nuclear weapons technology with the rest of the world. They are the United States, the Soviet Union, France, China and Britain.

Speaking at the opening of the 32nd IAEA conference here today, Blix said that the last 30 years has seen a steady development in nuclear energy.

Judging from the increasing need for energy for future international economic development, he said, nuclear energy will be still a major power source, although there is growing public wariness of the safety of atomic power.

Blix said that 22 new nuclear power plants were opened last year, bringing the number of operating plants to 417 in 26 countries. But, he said, "attacks on the use of nuclear power have at the same time increased in many countries."

World-wide nuclear capacity increased last year by eight percent to some 300,000 megawatts, representing more than 16 percent of global electricity production.

Blix said that 13 nations draw 25 percent of their electricity needs from nuclear production, and 120 atomic power plants currently under construction are expected to account for another 102,000 megawatts.

He said that increased use of nuclear power can ease the so-called "greenhouse effect" of a global warming of the atmosphere.

He said that nuclear energy is the only way to cut back the release of chemical wastes blamed for causing the "greenhouse effect."

The effect occurs when carbon dioxide, largely from burning fossil fuels, and other gases increase in the atmosphere. There, gases let incoming heat from the sun reach the earth but they reflect outgoing heat, keeping it from dispersing into space. This traps heat, much like a greenhouse traps heat indoors.

Blix argued that increased use of atomic energy would reduce the amount of carbon dioxide emissions by replacing plants that burn fossil fuels.

During the five-day conference, more than 700 representatives from 135 countries and more than 20 international organizations will discuss implementation of the convention on the early notification of nuclear accidents and the convention on assistance in the event of a radioactive emergency.

Nuclear Safeguard Agreement Signed With IAEA
OW2009181088 Beijing XINHUA in English
1715 GMT 20 Sep 88

[Text] Vienna, Sep 20 (XINHUA)—China signed an agreement with the International Atomic Energy Agency (IAEA) to accept agency safeguards on all its civilian nuclear installations.

The agreement is effective immediately. It was signed by the Chinese chief delegate, Zhou Ping, and the director general of the IAEA, Hans Blix, at the IAEA's annual conference here.

China's move means that all five nuclear-weapon states, the United States, the Soviet Union, China, France and Britain, now open their non-military nuclear installations for international inspection.

The Chinese chief delegate said after the signing that the decision was made "in accordance with China's independent foreign policy of peace."

"China does not favor nor encourage nuclear proliferation, and it will not help other countries develop nuclear weapons," Zhou announced.

The signing of the agreement, Zhou said, demonstrates China's commitment to the peaceful use of nuclear energy and its good will in the promotion of international cooperation in this field.

"After the signing of the agreement, the cooperation between China and the agency in the field of safeguards will develop in strength and in depth," Zhou said.

China had declared at the agency's 29th conference in 1985 that in due time it would voluntarily open some of its civilian nuclear facilities to the agency's inspection.

Nuclear Energy Development Policy Affirmed
OW2109035388 Beijing XINHUA in English
1720 GMT 20 Sep 88

[Text] Vienna, Sep 20 (XINHUA)—Nuclear energy has more advantages both economically and environmentally than other major energy sources presently in use, Zhou Ping, head of the Chinese delegation, said today at the 32nd annual conference of the International Atomic Energy Agency.

Generally speaking, Zhou said, the development of nuclear energy has no more adverse impact on the human environment than conventional power stations.

With the lessons drawn from the Chernobyl accident, Zhou said, more attention will be given to nuclear power stations, and safety measures for nuclear energy will be further improved.

China has adhered to a policy of "developing nuclear energy actively and appropriately" in the past two years, Zhou said. However, he added, "safety and quality first" must be ensured.

Long-Term Development of Nuclear Power Urged
OW2709081988 Beijing XINHUA in English
0255 GMT 27 Sep 88

[Text] Beijing, Sep 27 (XINHUA)—China should step up its efforts to build more medium-sized hydropower stations to overcome national power shortages, according to today's Overseas Edition of PEOPLE'S DAILY.

Speaking at a symposium on energy issues organized by the paper, experts said that, although China is the world's fifth biggest generator of electricity, it will still suffer from power shortages for the foreseeable future. The shortage was estimated at 70 billion kilowatt-hours in 1987.

The government should give priority to tapping potential hydropower nationwide, the experts suggested. China has enough hydropower resources to feed 900 medium-sized stations with a total capacity of 14 billion kilowatt-hours. But only about one-tenth of this number was being constructed by the end of last year.

In the long term, the experts said that China should develop its nuclear power industry. Thermal power stations are expensive on coal and exacerbate transportation difficulties.

PRC, Hong Kong Reports on Submarine-Launched Missile Firing

Underwater Missile Launch Described

*HK2909150888 Beijing RENMIN RIBAO in Chinese
28 Sep 88 p 1*

[Report by reporters Zou Dayi (6760 1129 3015) and Cao Huanrong (2580 3562 2837): "A Curved Line Across the Sea and Sky—Witnessing the Underwater Launch of a Carrier Rocket by a Nuclear Submarine"]

[Text] One day in mid-September the autumn wind blew from the south, sweeping the sky clean over the sea areas in the northern part of China. The visibility was very good and clear, and this provided a good opportunity for the underwater launching of a carrier rocket from a nuclear submarine.

A score of warships formed a column to sail to a predetermined sea area. Ashore, large observation apparatuses such as remote-controlled radar were operating. Numerous parabolic and "fishbone" antennas kept a close watch on the sea. The large submarine shouldering the great task of launching the carrier rocket slowly left the dock located on the gulf. Like a giant whale it splashed through the sea, sailing toward the area where the test was to be conducted.

The chief rocket designer was among the masses who saw the submarine sail. He never stopped waving his hand as he gazed after the departing warships. He was familiar with our country's first generation submariners and also familiar with the 100,000 to 200,000 parts of the rocket. He believed that there would be no danger of anything going wrong in the test because the test embodied the concerted efforts of tens of thousands of people.

The control and command center was already preparing for a major combat operation. In the general scheduling cabin, rows of yellow indicator lamps glittered. On the monitor screens, green dots and lines were moving up

and down. On the projection screens, signals, figures, and hydrologic data were changing frequently. Digital time indicators in the middle of the cabin were counting both forward and backward, approaching the eye-catching moment.

The general scheduling cabin issued an order: "Two hours for preparation!"

The bluish-gray nuclear submarine began to submerge. Not long after, the dark green sea threw up white spray, and the "giant whale" immediately disappeared.

During the last 5 minutes of preparation, all command and monitoring centers, stations, and stands were listening attentively to the sound produced by the submarine.

"One minute for preparation!"

People in the command center stared at the TV screen, which reflected the situation on the sea surface. Various facilities emitted low "squeaking" sounds.

The door of the launch cabin was tightly closed and silence reigned. All working personnel held their breath. A technician was sitting on the ground, burying his head between his legs.

When the time indicator showed 30 seconds, the chief of the rocket section shouted calmly and clearly:

"30...20...10...5, 4, 3, 2, 1, launch!"

A loud sound like muffled thunder violently shook the giant submarine and it jerked intermittently. The carrier rocket left the nuclear submarine and raced upward through the thick sea water.

Instantly it broke through the surface, creating clusters of bubbles like crystals. It wobbled slightly, spurted red flames, and gallantly and quickly flew toward the blue sky. Gradually, it became a small dot of light and eventually it disappeared, leaving a long trail of white smoke in the sky.

Immediately after the word of command was uttered, the steel penholder in a functional logger with a colored nib attached suddenly dropped onto drawing paper containing the predetermined theoretical flight route, and moved steadily forward recording the actual flight route of the rocket. The actual flight route nearly overlapped the theoretical one.

"The rocket is flying normally!" "The first stage has turned off, and the second stage has turned on!" "The second stage has turned off!" The monitoring station submitted an encouraging report. Commanders in the command and control center, and veteran experts who participated in the design and manufacture of nuclear missile submarines and carrier rockets stood up, applauded, and shook hands with and nugged each other.

The test of an underwater launch of a carrier rocket from a nuclear submarine which was designed and manufactured by ourselves was successful. This demonstrates that the modernization of our naval facilities has entered a new stage.

The general scheduling cabin issued messages from time to time: "The Yuanwang has located the target! It is tracking normally!" "It has landed at the designated area! It has landed accurately!"

At that time, all the warships sounded their sirens in victory for 3 minutes. On the deck of an observation ship our sailors' band played the national anthem. People stood and saluted our national flag and the colors.

Significance of Launch Analyzed

HK2909043788 Hong Kong TA KUNG PAO in Chinese
29 Sep 88 p 2

["Political Talk" column by Shih Chun-yu (2457 0689 3768): "A Chinese Nuclear Submarine Fires a New Type of Missile"]

[Text] The Xinhua News Agency announced in Beijing on 27 September that China had launched a carrier rocket to a predesignated sea area between 14 and 27 September. The launch test ended satisfactorily on 27 September. Concise and containing only 100 words or so, this Xinhua report said that the carrier rocket was launched underwater by a Chinese-made submarine. The rocket fell accurately in a predesignated sea area, and the entire test was a complete success.

Although the report was composed of only 100 words or so, it revealed important contents. On 27 September foreign experts saw on television how the missile was launched from underwater to a predesignated sea area in China's Dong Hai. These experts pointed out that this underwater launch test was different from the first one conducted in October 1982, adding that the rocket launched might be a new type of strategic underwater rocket propelled by a new type of solid fuel.

The commander of the Chinese submarine said after the successful launch test that a major technological breakthrough had been made during this launch as compared with the test in 1982, adding that this marks a leap forward in China's national defense modernization.

"Another leap forward" means great progress made over the last 6 years in the technology of launching underwater nuclear missiles and in the manufacture of nuclear submarines. The accuracy in launching the rocket to a predesignated sea area proves the accuracy in remote control technology.

So far only five countries in the world have the ability to launch underwater missiles from submarines. The successful launch test suggests that China has acquired a second capability for making counteroffensives in case of nuclear attacks. It also indicates that China's naval force has strengthened.

The world situation is now tending toward relaxation. The United States and the Soviet Union have signed the treaty on the elimination of medium-range missiles. In addition, they are still discussing the treaty on eliminating half of their long-range missiles. This treaty may be signed next year. Under such circumstances, China's efforts to develop submarines and underwater carrier rockets may possibly cause a misunderstanding in some foreign countries. They will think that it is unnecessary to develop such weapons in the present situation.

But we should be aware that China's meager nuclear power is incomparable to U.S. and Soviet nuclear power, which could be used to destroy the world at least 10 times over. China has time and again stated that its nuclear power is for self-defense. China will follow suit when the United States and the Soviet Union agree to eliminate their nuclear arms.

As a matter of fact, China is still on its way to national defense modernization. Generally speaking, China's naval and air forces are still weak. In particular, it must have a powerful defense for its over 10,000-km-long coastline. Up to the present, Vietnam is still attacking and harassing the Chinese border and looting Chinese fishermen. It is trying to encroach on China's Nanshas [Spratlys] and Xishas. The Soviet Union is standing behind Vietnam. Cam Ranh Bay has become the largest Soviet military base in East Asia, constituting a direct threat to eastern and southern China.

He who does not plan for the future will find trouble on his doorstep. In the long run, all nuclear weapons will be eliminated. This is the wish of people around the world. But, from a short-term viewpoint, China will not be able to ensure the opening up and construction of its coastal areas without a powerful maritime defense force. For example, Hainan Island should take into account the possibility of Vietnam's making trouble in the course of opening up to the world on a large scale and exploring oil and natural gas fields in the Beibu Gulf. Without a naval force, the Nanshas and Xishas would have been encroached on by Vietnam.

China is speeding up its reform and opening up to the world and is engaged in peaceful economic construction. China cannot economize its expenditure for national defense modernization because it serves as a guarantee for the implementation of the opening up policy. Without China's ability to defend itself, foreign businessmen would not have had the courage to make investments in the country.

YUGOSLAVIA

Future of Nuclear Energy Development Viewed
51003007 Zagreb VJESNIK in Serbo-Croatian
31 Jul 88 p 7

[Article by Boris Petrovic: "The Last Counterattack of the Nuclearists"; first paragraph is VJESNIK introduction]

[Text] Despite the venomous bolts loosed against the construction of nuclear power plants, the nuclearists are not retreating. What sort of "arsenal" are they taking into the "war with the greens" on the eve of the planned introduction of the Law on a Moratorium on the Construction of Nuclear Power Plants Through the Year 2000?

"We will not accept that 4 major self-management basic associations and 36 economic entities, labor organizations from all over Yugoslavia, should persistently be called "lobbies," "oligarchies," and "monopolists" as the Svarun Group repeatedly does in its "Misljenja i Stavovi o Građnji Nuklearnih Elektrana" [Opinions and Positions on the Construction of Nuclear Power Plants]. For that matter, this very name-calling says a great deal about the group's willingness to enter into democratic debate on this issue."

This is how the infuriated nuclearists begin their response to all those against continuing the Yugoslav nuclear program, and to Zagreb's Svarun Group in particular. In what will probably be their final public counterattack, on the eve of the planned introduction of the Law on a Moratorium on the Construction of Nuclear Power Plants Through the Year 2000 they openly acknowledge that they are vitally interested in carrying out the plans announced in the international competition. It will be remembered that Yugoslavia announced an international competition calling for bids for the construction of four nuclear power plants; the bids came in but no official announcement was ever made as to who won or what the winning terms were, and as things now stand, the "winner" of the competition will be waiting for some time for the start of the "deal of the century" in Yugoslavia.

The ambitious potential builders of nuclear power plants are still unable to reconcile themselves to this situation and especially to the flood of protest against spending on "atomic electricity." How do they justify their stubbornness?

Is Nuclear Power Dead in the West?

We found the answer to this question in the long letter sent to VJESNIK (as well as to other newspapers that have written frequently about the debates on nuclear power plants) by Zarko Petrovic, coordinator of the Working Group for Preparations for the Construction of the Prevlaka Nuclear Power Plant. The working group

operates within the Association of Electricity-Generating Organizations of Croatia, which has been warning for years about the "electrical shock" Croatia will receive as early as 1992, asserting that through the end of the century the power shortage will grow increasingly serious, regardless of which of the planned variants of economic development finally takes place. To be sure, under public pressure the association ceased its noisy pleas to go ahead with construction of the Prevlaka plant, but even though that name is not mentioned, it is quite clear what the "mighty source of electricity" in its development plans refers to.

In addition, Petrovic energetically denies charges by the opponents of nuclear energy that it is the result of a "world fad"—one which has already died down considerably for that matter—as well as charges that Yugoslavia relies too little on remaining conventional sources of electrical energy. As for that "fad," Petrovic reiterates, the "nuclear boom" came about as the world's logical response to blackmail by the once-powerful OPEC and as a result of the desire by the most developed countries to acquire more reliable sources of energy. Whereas Svarun, as VJESNIK has also reported, asserts that the West has largely abandoned the large-scale construction of nuclear power plants, Petrovic claims to prove the opposite.

"It is not correct that 'nuclear power is dead' in the West because France, Great Britain, West Germany, the United States, Canada, Japan, South Korea, Taiwan, and yet other countries are still building nuclear power plants, and this is so primarily because they are competitive in the economic, energy, and ecological spheres. This is particularly true of countries where thermoelectric plants play a substantial role in the electricity-generating systems," according to the nuclearists' response to Yugoslavia's "greens."

And yet they admit that construction and orders for nuclear power plants have slowed down. But this can be explained as the result of "three coincidences." The first is that in 1978 electricity capacity in the United States was 35 percent higher than the demand of consumers and of a market in the throes of recession. Thus, the annual growth of demand for electricity was barely 3.5 percent rather than the planned 6 percent! The next "coincidence" was the Three Mile Island incident, after which operating rules for nuclear power plants were tightened considerably, which considerably prolonged the time required to complete them. The Prevlaka working group notes, by the way, that "this very incident proved the excellence of a nuclear power plant which, despite gross errors by the personnel, did not release radioactivity into the environment over allowable limits." As proof that even Chernobyl did not put a stop to the world nuclear campaign, the letter notes that the East European countries have continued with their construction but are relying on proven VVER types which are operating successfully in several countries (one of these facilities is also operating in Finland—author's

note). Among other "proofs," Petrovic cites the opinion of experts at the World Energy Conference in Cannes (1986), that "in the next 50 years nuclear power plants will dominate because of the exhaustibility of world reserves of coal, petroleum, gas, and water."

We Are Not Rich

"We agree that the old Strategy for Energy Development in Yugoslavia anticipated unrealistically high growth in the demand for electricity. But that is one extreme. Another extreme is a legal ban on the construction of nuclear power plants, and the so-called zero growth in electricity consumption proposed by the opponents of nuclear power. We must seek the objective truth between these two extreme opinions, and that is that 47 percent of this country's electricity production comes from hydroelectric plants, which means that the supply is very dependent on weather conditions. Because of this, any fairly serious drought or damage in a good-sized thermoelectric facility will cause drastic reductions. At the same time, it is difficult to believe that major results are possible through "super savings in general consumption" when we know that in terms of per capita electricity consumption we are at the very bottom of the European ranks, and that the only solution for this is large-scale closures of steelworks, of rolling mills, of sections of the ceramic and aluminum industries, and of some chemical sectors. If that is what they are proposing, why do they not also say how many people will lose their jobs as a result and what the likelihood is that the restructuring of the Yugoslav economy will provide new jobs to make up for the lost ones?" the nuclearists inquire, adding that the most effective way to rationalize consumption is through economic measures (i.e., prices).

But on the other hand they "reliably state that in light of the structure of consumption, its very low level, and needed economic development... for some foreseeable time we will still have to expect growth in electricity consumption of between 4.0 and 4.5 percent annually. With such growth, Yugoslavia will require 135-140 billion kilowatt hours of electrical energy in the year 2000, or to put it more simply, in 12 years it will be necessary to increase the production of electricity by 70 percent! The countries cited by Svarun as proof that the energy experts' plans are overly ambitious consume over 8,000 kilowatt hours of electricity per capita, have been systematically rationalizing energy consumption since 1973, and have never had to worry about a shortage of any source of energy!"

"In this country, however, the situation is entirely different. We still remember the reductions; consumption amounts to only about 3,500 kilowatt hours per capita, and economic development—which includes energy consumption as well—is a story of its own. Of course, it is up to the economists to establish the proper relationship between industrial growth and growth in energy consumption, i.e., to reduce it to the world norm, but even that unavoidably points to growth in demand for all

types of energy, including electrical," the nuclearists assert. They do not agree with the opinion expressed by Svarun and some others that in the final analysis this country is at least "average in terms of energy resources." They offer figures proving that the remaining economically usable hydroelectric potential amounts to only 25 billion kilowatt hours and coal reserves to 13 billion tons. To call this riches "is illogical! In the best case, we will harness the remaining water resources by 2010, and coal would help overcome the energy crisis only if we were using 160 million tons annually as soon as at the end of the century." This is what the nuclearists say, in spite of the note that the coal we are using at present amounts to half the cited figure and that for some years production has been stagnant.

The Biggest Minus—Waste

We will skip the extensive explanation of how "nuclear electricity" could prove noticeably cheaper in the final analysis than that produced through large-scale construction of (mini)hydroelectric plants or coal-burning thermoelectric plants with adequate ecological protection. But it is worth discussing the part of the nuclearist-ecologist dispute that pertains to the possibility of importing electricity. For, if it is true that developed countries have large surpluses, then in accordance with the law of supply and demand they will indubitably sell electricity on favorable terms and thus derive additional benefit from their costly generating capacity.

In his letter Petrovic firmly notes "that one must be either malicious or naive to believe that such a solution is feasible for Yugoslavia too." The Svarunites propose imports as an economical and "clean solution" to which numerous developed countries with energy deficits turn without, however, thereby endangering their energy independence. This is because there are a number of different producers in the world, and they purchase from the cheapest and generally most favorable. The so-called spot market is available only to those countries which are liquid at all times or have a convertible currency. This means that they can indeed purchase electricity on the most favorable terms. As for barter with neighboring countries, the nuclearists say that this happens only when two or more countries have surpluses or when it is possible to settle debts by exchanging goods. Thus, for instance, Yugoslavia has often paid for electricity with corn.

There is not room here to discuss all the arguments and counterarguments offered by the two "belligerents," and we will also pass over the portions of the letter containing a response to articles published in other daily newspapers by the opponents of nuclear power. At the end we will mention only that without a doubt the main objection to the nuclearists still holds—the unresolved question of nuclear waste storage facilities. It has not been answered satisfactorily even in countries relying to a considerable degree on nuclear power plants, and despite how the advocates of atomic power extol the "ecological

advantages" of such facilities, it is without a doubt the greatest minus in their arguments. After all, even at the recent session of the Section for the Defense and Promotion of the Human Environment of the Republic Conference of the Socialist Alliance of the Working People of Croatia, the statement that the Krsko nuclear power plant should solve its waste disposal problem in no more than 2 and ½ years or cease operation was not refuted!

Obviously the discussion on nuclear power plants will continue after the end of summer but at a higher level this time, in the expert bodies and committees of the Yugoslav Assembly. As things now stand, the nuclearists have lost the first battle but the result of the "war with the greens" will not be known until the vote on the moratorium is held.

12593

BRAZIL

Renegotiation of FRG Nuclear Accord Sought *PY2209181588 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 21 Sep 88 p 28*

[Text] Rio de Janeiro—John Foreman, president of the Brazilian Nuclear Industries (Industrias Nucleares do Brasil) (INB), tonight will leave for the FRG, very "confident" that the German enterprises Interatom, Steag, and KWU (Kraftwerkunion) will pose no obstacles to the proposal he will submit for the renegotiation of the nuclear agreements between the two countries. This renegotiation is sought as a result of the restructuring of the Brazilian nuclear program that led to the elimination of Nuclebras.

According to Foreman, Brazil will propose that these three enterprises give up their participation as shareholders in two subsidiaries of the former Nuclebras (Nuclam and Nuclei) [Nuclebras Mining Assistance, Inc. and Nuclebras Isotope Enrichment, Inc.], without any compensation. He also believes that these enterprises will agree to the transfer of Nuclen [Nuclebras Engineering, Inc.] to Eletrobras [Brazilian Electric Power Plants]. Nuclen is another subsidiary of Nuclebras, responsible for the construction of the Angra II and III nuclear plants. A preliminary agreement was reached this week for the purchase by the INB of 2 percent of the shares from Nuclep [Nucleabras Heavy Equipment, Inc.] (manufacturer of equipment for the nuclear sector), which will be privatized and offered for sale through public bids within 3 months.

Foreman believes that these three German enterprises will not create any difficulty now that Brazil is taking the initiative to change clauses of the contracts because, in the past, Nuclebras agreed to some changes proposed by these enterprises without posing any problem and without demanding financial compensation. Foreman says that 5 years ago the Germans expressed a desire to halt the activities of Nuclam, arguing that the demand for uranium had declined in the FRG. The supply from

Brazil was no longer necessary. Another concession granted by Brazil was the purchase by the INB of shares of Nuclep, proposed by the Germans and formalized this week after a year of negotiations. Foreman believes that Rex Nazare, chairman of the National Nuclear Energy Commission (CNEN), will not have to leave Vienna, where he is attending the IAEA annual meeting, to help him in the negotiations.

The understandings, however, could be more difficult than Foreman believes. After all, the German enterprises have invested resources in the subsidiaries that Brazil now intends to abolish. The FRG holds 49 percent of the shares of Nuclam, a subsidiary company created to produce and export uranium to the FRG, and, although this company has been out of operation for 5 years, the agreement provides for its reactivation whenever the FRG expresses interest in purchasing the product again. Foreman thinks otherwise, however: "We do not need to indemnify the Germans at all because the elimination of Nuclam represents the recognition of a real paralysis." The FRG also holds 25 percent of the shares of Nuclei, a subsidiary company created to produce the first uranium enrichment cascade at an industrial level mounted in Angra dos Reis. Nuclei was also abolished by the decree, signed by President Sarney, that has restructured the nuclear sector. Nevertheless, the project for the production of the first cascade continues, and it will be managed by the INB, which intends to finish it by December 1989. Foreman said in this regard that he sees no reason to purchase the FRG's shares. He said: "Nuclei represents risk capital. It received resources from both the FRG and Brazil. Profit has never been the objective, and therefore there is nothing to indemnify."

Regarding Nuclen, responsible for the construction of the nuclear plants, the foreign partners must now seek understandings with Eletrobras, which has absorbed the company and is now responsible for finishing Angra II and III. The FRG has 25 percent of Nuclen's shares, and an agreement was reached this week for the purchase of the 2 percent remaining in the hands of the German companies. This measure was necessary because the government has decided to privatize the enterprise.

INDIA

Reporter Visits Uranium Mine, Tells Future Plans
51500002 Calcutta THE STATESMAN in English
4 Aug 88 pp 1, 7

[Article by Tapas Ray]

[Text] Jaduguda, Aug 3—As one drives down to this sleepy settlement at the foot of a range of low hills in Bihar's Singhbhum district, it is almost impossible to believe that India's nuclear industry has its roots under the soil here, that below the unpainted concrete tower, which looks like a community water tank, but is really the "mine head frame," lies a store of uranium ore from which comes not only vast amounts of power but also produces the substance "brighter than a thousand suns."

More surprising is that in certain plans being made for a considerable expansion of uranium-related activities in this area there are indications of a fundamental change in the planners' perception of the nuclear industry's strategic requirements. To explain this, one has to chart the course of the ore through various processes, which ultimately lead to the core of the reactor at the nuclear power station at Kalpakkam or Rawatbhata.

According to official sources, the mine here produces about 1,000 tons of the ore every day and another, smaller one at Bhatin a couple of miles farther into the hills, yields about 250 tons. About 3,200 people work there and three small units at Musaboni, Surda and Raka, recover whatever little uranium bearing "tailings" are available at the copper mines after the copper ore goes through the "concentrators." Jaduguda also has a mill, which processes the uranium ore into magnesium diuranate ("yellow cake"). This "cake" is transported to the Nuclear Fuel Complex (NFC) at Hyderabad. Further processing follows and the Department of Atomic Energy gets UO₂, that is, uranium dioxide, the fuel for the country's nuclear power plants. The UO₂ is cast into "pencils," which are pushed into tubes made of a special zirconium alloy called zircaloy (which is also made at NFC). The tubes containing uranium dioxide "pencils" are bundled into "fuel assemblies" which finally go into the reactors. The latter also need heavy water, which is made at Nangal, Baroda, Tuticorin and other places.

A question arises here—when India's only uranium mines are here, in the hills of Singhbhum, why have the processing plant at Hyderabad, about 1,000 km to the south-west as the crow flies? The answer, according to sources, is that so far it has been considered imprudent to locate different components of the industry at the same place or even close to one another because of certain considerations: Bihar is a border State and, as such, bombing raids or missile attacks by an enemy country cannot be ruled out. Had the fuel complex been located near the mine site here, such an aerial attack would destroy it and put the mines out of action at one

stroke. But as it stands now, it is not possible to destroy the Hyderabad complex and the mines here with a single bombing sortie or missile attack.

This was the reasoning of the planners. But something has obviously changed. There are now indications that along with two new mines near here—at Narwapahar, 12 km to the north-west and Turamdih, 25 km to the north-west—there will be facilities for processing the ore into uranium dioxide fuel. The plant will probably be located at Turamdih. From there, the oxide will be sent to NFC, Hyderabad, where the final "fuel assemblies" will be made with zircaloy tubes produced there. And this is a point stressed by the sources—that the final assembly, which actually goes into the reactor core, will continue to be the product of the Hyderabad complex.

Mr M.K. Batra, chairman and managing director of the Uranium Corporation of India Limited (UCIL), the public sector unit which runs the mines here, says the Government has not yet given the final clearance to the proposal to locate the processing plant at Turamdih and that NFC is still preparing the detailed project report. But the green signal seems certain sooner or later and there are reports that land is being acquired.

Informed sources, however, wonder why the Turamdih project was recently described as "India's second Nuclear Fuel Complex" in a section of the Press. They point out that it does not match the Hyderabad complex in any way. The investment being talked about for it is "of the order of Rs 100 crores," which is nowhere near that made in Hyderabad, where producing uranium dioxide is only one of several activities. Some of the other high-technology activities there are: making "enriched" UO₂ fuel assemblies, starting from imported uranium hexafluoride; making zircaloy from zirconium sand and fabricating the tubes and then assemblies; developing and fabricating components for the prototype fast breeder reactor; producing, on a small scale, special high-purity material like gold, silver, gallium, selenium and tellurium; making special seamless stainless steel seamless tubes for 235 MW and 500 MW nuclear power plants and making certain components for Defence.

The NFC planners are reported to be considering for the Turamdih plant a process different from the one being used at Hyderabad. Instead of converting the proposed Narwapahar and Turamdih mines' ore into yellow cake first, it is likely to be treated to make a slurry, which will be fed into the processing plant to produce the oxide fuel. Jaduguda and Bhatin ore will continue to be converted into yellow cake and transported to Hyderabad for processing into oxide and then fabrication into assemblies. The importance of the two existing mines will not be lost since they have proven deposits up to a depth of 900 metres, while mining is in progress at present up to about 600 metres.

At the present rate of exploitation, Jaduguda and Bhatin will last at least 20 years. The two new mines, which are planned to be operational in five or six years, according to Mr Batra, will have a daily production capacity of 3,000 tons of ore and will employ about 3,500 people, which is low in comparison with the Jaduguda and Bhatin mines, which employ about 3,200 people for a daily capacity of about 1,250 tons. The reason, Mr Batra explains, is that the new mines will have a greater level of mechanization than these two. Residential quarters are being constructed at Turamdih, which is only about seven kilometres from Jamshedpur.

But all this seems to be only the beginning. According to informed sources, particularly encouraging deposits have been found at Mahuldih, Kanyalok, Bagjanta and some other places in Singhbhum. The ore at Kanyalok-Bagjanta, about 90 km from Jamshedpur, is reported to be of a higher grade than the one at Jaduguda, which is said to contain 0.03 per cent to 0.06 per cent of U308, the uranate from which UO2 is produced. Sources say that in all likelihood, the next mine will be opened at Bagjanta, where the Mineral Exploration Corporation is at work mining the ore and sending it to Hyderabad.

Mr M.K. Batra says that the next mine is likely to be opened at Bodel in Madhya Pradesh but does not say why the Singhbhum belt will not first be exploited more intensively.

/6091

Minister on Dangers From Pakistan Nuclear Development

51500003 New Delhi PATRIOT in English 7 Aug 88 p 3

[Text] Pakistan is going ahead with its programme of acquiring nuclear knowhow by hook or crook. "In fact we are clear that Pakistan is fully capable of manufacturing a nuclear bomb, which is a definite threat to India's security. But India will not remain sitting duck. We will not hesitate to review our nuclear option if the security of the region is threatened by Pak going nuclear."

This was observed by Minister of State K.K. Tewari on Saturday, while giving the inaugural address of the two-day seminar on "Recent trends in Pakistan and its nuclear capability," organised by the Indian Centre for Regional Affairs.

The assassination of former Prime Minister Indira Gandhi and the recent revelations of the plans of Pakistani agents to assassinate Prime Minister Rajiv Gandhi and other dignitaries of the country, clearly indicated that the present regime in Pakistan was being used as a proxy against the process of peace in the region by certain forces.

He said that on the one hand government of Pakistan was repeatedly telling India that they were not interested in destabilising the country. On the other reports continue to pour in about their continued involvement in such anti-Indian activities. "Frankly it is not possible for us to pretend that it can be business as usual with Pakistan even though it was working against the unity and integrity of our country," he asserted.

U.S. Motives

If the USA were sincere about peace in the region, it could have put its foot down and prevented Pakistan from going nuclear, which it knew was not for peaceful purpose, he said.

In his introductory remarks, Indian Centre for Regional Affairs general secretary V.D. Chopra said the present seminar was in a way preparatory to another international seminar to be held on 24 and 25 August, focussing on the aspects of the implementation of the Geneva Agreement in Afghanistan and the problems involved therein.

He said that the Centre was a non-official body consisting as its members diplomats, academics, lawyers and intellectuals, not only of India but also of countries around India, with a specific endeavour to pool their minds together to solve some of the burning problems of the region.

Later, when the seminar began, the first paper was read out by Prof Kalim Bahadur of Jawaharlal Nehru University. He spoke on the "Current trends in Pakistan." He said that on 29 May this year General Ziaul Haq sprung a surprise in a typical military fashion on the people of Pakistan, by dismissing Prime Minister Junejo and dissolving the assembly and declaring non-party elections. This, he said, brought the country back to square one to the 5 July, 1977 position when he had promised to hold elections within 90 days as provided in the Constitution. Elections were held in Pakistan in 1985 after a lapse of eight years. That proved to be partyless elections and saw the rise of a new crop of opportunists.

Tracing the current trends emerging in Pakistan which have a political bearing on the entire region as well, Mr Bahadur tried to investigate the prospects for the democratic process in Pakistan. He was however hopeful that even if the forces of democracy made a small chip in the armour of Pakistan's military rulers, it would be a great victory for democracy which in the long run would only grow further as the process could not be reversed.

"The coming months in Pakistan will see rapid changes in the political scenario there. If the democratic forces are able to rise, they will serve the cause of democracy, progress and development in Pakistan and peace in the

region. If General Zia succeeds in keeping the people divided, tensions, conflicts and bloodshed within the country and in the region will be unavoidable," Mr Kalim Bahadur warned.

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Minister Discloses Plans for Fast Breeder Reactors

51500001 Madras *THE HINDU* in English
12 Aug 88 p 9

[Text] New Delhi, Aug 11—The Government proposes to set up a 500 MW prototype fast breeder reactor by 2000 A.D. and with the successful commissioning of this reactor, a series of reactors of similar capacity would be built but the cost of construction has not yet been finalised. Mr. K.R. Narayanan, Minister of State for Science and Technology, told the Rajya Sabha today.

He said fuel for these reactors would be obtained by reprocessing irradiated uranium discharged from the pressurised heavy water reactors and by recovering plutonium bred in the fast breeder reactor itself.

Threat to Environment Much Less

In reply to supplementaries, he said threat to environment would be much less than the radiation rate forced by a pressurised heavy water reactor. Mr. Narayanan said the neutron flux creates radioactivity, but the technology provided for internal shielding would absorb the neutron and the danger of release in background would be less.

Regarding the proposed two 1000 MW nuclear power stations to be set up with Soviet assistance, he said it was still under consideration of the Government and no decision had been taken so far.

To a specific remark made by a member, Mr. Narayanan said "we should not give credence to the western press which had charged that the country was stockpiling plutonium and importing heavy water." In this connection, he again reiterated the Government's stand that India's nuclear programme was for peaceful purposes and the country would stick to it.

A member made a specific query regarding the viability of fast breeder programme, to which Mr. Narayanan said it was a new technology still being developed in France, the USSR, the U.S., the U.K. and Japan. In fact, such reactors were functioning in some of the countries. Regarding France, he said the French had supplied components for India's programme.

Alternative Fuel Developed

Mr. Narayanan further clarified that an alternative fuel—mixed carbide—had been developed which had been fully tested and accepted. "We have complete

self-reliance and were also doing research in metallic fuel." He said the fast breeder programme would be completely indigenous. The Government had already asked some industrial firms to make basic components. While the construction was expected to start in 1990-91, it would be completed by 2000 A.D.

The Minister said, "we have sufficient reprocessed plutonium and also produce enough plutonium for all plants and there was self-sufficiency." Yet another member wanted to know as to whether there was any scope for using thorium in this technology, as India had 80 per cent of world reserves of thorium. Mr. Narayanan said the fast breeder programme was in the second stage and perhaps in the third stage thorium based programme could be considered. That would be the time when uranium reserves in the world would have run out. In any case, he said up to 2000 A.D. there was no question of using reprocessed plutonium.

Regarding a question on setting up nuclear power stations in Maharashtra, Mr. Narayanan said the Government was considering site selection committees' recommendations for setting up plants in future.

/6091

Experts Assert Nuclear Power Plants Safe

51500004 Madras *THE HINDU* in English
13 Aug 88 p 4

[Text] Bangalore, Aug 12—The Chairman of the Atomic Energy Regulatory Board, Prof. A.K. De and the Managing Director of the Nuclear Power Corporation, Mr. S.L. Kati, have said the country has proved its capability for safe operation of nuclear power plants.

The heavy water reactors, commissioned in the nuclear stations, ensured safety under all circumstances, they added while addressing a seminar on "Atoms for peace, power and prosperity" organised by the Department of Atomic Energy at the Indian Institute of Science here today.

Presiding over the inaugural function, Prof. De said the controversy in the country was only over the use of nuclear energy for power generation. There was no objection to the use of isotopes in medicine, agriculture and industry or research.

He pointed out that thermal power was not without its dangers and countries like China, which depended only on fossil energy, had been experiencing them. Thermal power generation resulted in large output of carbon-dioxide and ash. Nuclear power production had its hazards, right from the mining of uranium till its disposal. Generation of nuclear power involved complex and demanding technology, and preventive measures were of the utmost necessity. But its benefits were manifold.

"The plants can be operated safely and it is not so dangerous as it is thought of", he said. By the end of the century, the percentage of nuclear energy, out of the total power generated in the country, would be 10 per cent (1,000 MWe) as against two per cent today.

In his keynote address, Mr. Kati said India was one of the advanced countries in the field of peaceful application of atomic energy. Nuclear power had a very good safety record for three decades.

Paying rich tributes to the vision of Jawaharlal Nehru and Bhabha, Mr. Kati said the country was in the first stage of the three-stage strategy for optimum utilisation of a limited uranium and vast thorium reserves, worked out by Bhabha. The first stage consisted of pressured heavy water reactors utilising natural uranium. The second and third stages would consist of fast breeder reactors employing Plutonium and Uranium-233 respectively as fuel.

Inaugurating the seminar, Mr. T.R. Satishchandran, Director of the Institute for Social and Economic Change, said there was no option for the country except to tap nuclear energy.

A former Chief Secretary to the Government of Karnataka, Mr. Satishchandran called for more open discussion and wider consultation on nuclear power projects. The people should be taken into confidence by the Department of Atomic Energy and the Atomic Energy Regulatory Board before taking decisions.

He inaugurated the seminar in the absence of the Director of the Indian Institute of Science, Prof. C.N.R. Rao.

Mr. K. Narayan, Project Director, Kaiga Project, proposed a vote of thanks.

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Nuclear Power Company Announces 10 New Reactors

*BK0110050388 Delhi Domestic Service in English
0240 GMT 1 Oct 88*

[Text] The Nuclear Power Corporation, NPC, is to install 10 more nuclear reactors—with a total capacity of 3,940 mw—in the country before the end of the current plan period.

Speaking at a function in Bombay, the managing director of NPC, Mr. Kathy, said the government had already sanctioned funds for the purpose, and procurement of components is being taken up soon.

Mr. Kathy said expansion of Rajasthan and Madras atomic power stations is already in progress. About the [Kaigarh] atomic plant in Karnataka, he ruled out any adverse environmental effects, saying that all precautionary measures have been taken.

PAKISTAN

New Technique for Finding Uranium Developed

*BK0310092188 Delhi Domestic Service in English
0730 GMT 3 Oct 88*

[Text] Pakistan has reportedly developed a new technique for exploring [as heard] uranium and thorium. A UNI [UNITED NEWS of INDIA] report says the breakthrough has been achieved by a research group of the Pakistan Institute of Nuclear Science and Technology. While minute details are not available, the technique assumes additional significance in view of Pakistan's nuclear weapons program.

BELGIUM

State Secretary on Nuclear Plants, Waste, Natural Gas

51002455 Brussels LE SOIR in French 5 Aug 88 p 4

[Report on interview with Eli Deworme, secretary of state for energy, by Guy Duplat and Martine Vandendriessche: "Nuclear Waste: Storage Locations Electoral Secret"; date and place not given]

[Text] Nuclear waste, a new nuclear power station in Doel, a contract for natural gas from Algeria, renegotiation of the oil contract program, the future of the nuclear power station in Mol: in this administration, the thick and delicate energy files have fallen into the moneybag of 56 year old Elie Deworme, secretary of state for energy, a socialist from Virton. True, his guardian minister, Willy Claes, has not forgotten his lengthy experience in energy problems and maintains the ultimate responsibility in the matter, but so far he has put his trust in his secretary of state, a graduate in education, who has spent his first months as secretary of state getting informed about everything.

It is with pride that he spoke about the lengthy questionnaires he sent to the actors in the debate or that he recalls some of the sixty personalities he met with to build up the basic documentation for his future policy. He came out of that first overview with qualified opinions on nuclear matters and with original or even surprising ideas, the future will tell. Ideas which sometimes ran against the current of general opinion and which will require confirmation.

Distrigaz

The conflict between Distrigaz, which was unable to absorb the quantities of natural gas provided for in its contract, and the Algerian Sonatrach is still in the hands of international arbitration. In the meantime, Distrigaz has unilaterally set the quantity and the price of the Algerian gas it will take. "If we were to take over the entire responsibility for the signed contract," explained Elie Deworme, "that is to say purchase the quantity of natural gas demanded by the Algerians at the price set in the contract, that would mean that between April and December of this year Belgium would be faced with an additional bill of 11 billions Belgian francs."

The Belgian government is still trying to get the electric power companies to take the step of burning more natural gas in the electric power stations.

"I believe that they could do more," argued Elie Deworme. "They are not adequately taking into account the advantages of natural gas: abundant quantities, including natural gas from the Soviet Union which is shipped close to our borders and which has been 20

percent cheaper than the market price, the geopolitical diversification of the reserves, and the total respect for the environment of this kind of fuel."

But there is the price argument. Electricity produced from natural gas is more expensive than nuclear electricity.

"I just received a study, which still needs to be confirmed, which came from neither the pronatural gas circles nor the electric power company circles. It shows that electricity produced from natural gas could be cheaper than nuclear electricity."

If that is true, that would overturn quite a number of ideas, would it not?

"I am reading the results of this study comparing electricity produced by a 1390 megawatt nuclear power station with that produced by the new 300 megawatt combined cycle natural gas turbines. And under the assumption that the price of nuclear fuel and of natural gas (at market conditions) remains stable, nuclear electricity would be more expensive than that produced from natural gas. The price difference would amount to 5 billion Belgian francs per year. And the market price of gas would have to increase by 70 percent to reverse the result."

New Nuclear Power Station

This type of result corresponds with the arguments of the Flemish socialists who are demanding that instead of building a new nuclear power station, natural gas plants be built which would make it possible to solve—in part at least—the problem of excess Algerian gas. It is known that for Claes, the DISTRIGAZ problem is an absolute priority. By replacing the nuclear power station, which the SP does not want, with natural gas power stations, they would kill two birds with one stone.

"I have spoken to you only of assumptions which, together with others, will be part of the discussions of the national energy committee on the future physical facilities plan for electricity producers. A plan which I have not received yet—if I were an electric power company I would wait until after the municipal elections to publish it. We will have to compare the possible choices, both in terms of the diversification of our energy sources and of the impact on those of our industries which could export gas technology."

The Nuclear Industry

"I have no preconceived positions about the nuclear industry," added the secretary of state. "If tomorrow, after having taken all the factors of the decision into account, taking into account the government agreement stipulating a preference for a nonnuclear choice, this latter choice were to emerge as the only one, then I would recommend it for government decision."

Early this year, the electric power companies negotiated the possibility of replacing the future Belgian nuclear power station with the purchase of a nuclear power station or of part of such a power station in France. "French law prevents foreigners from owning a nuclear power station on French soil. Our neighbors would like to sell their electricity, but however close to the French I may feel as a Walloon, I must pay attention to our independence in terms of energy. We must produce our electricity ourselves."

Radioactive Waste

The public agency in charge of nuclear waste management, ONDRAF, has requested a quick decision from the government in choosing a site for the storage of low radioactive waste products produced in our nuclear-power stations. Several alternatives are being considered: burial in the clay layers in Mol, storage at the bottom of abandoned coal mines, or the creation of a new site somewhere in Belgium. Ondraf has selected five geologically favorable zones in Belgium. Zones of 10 square kilometers each, which could be used for additional studies in order to choose a site for the storage of waste. There are two zones in Flanders (one of which is at Loo near Furnes) and three in Wallonia (one of which is in the province of Luxembourg, north of Marche). Elie Deworme seems to prefer the depths of Mol. In any case, he has impressed upon ONDRAF not to reveal the names of the possible sites until after the municipal elections (as a Luxembourg minister, he is indirectly affected because one of the sites is located in his province!).

"We must avoid reactions of rejection on the eve of the municipal elections. Before being part of the government, I myself informed the Senate of the people's anxiety and I opposed the choice of a site in Luxembourg, but today, being better informed, I see things differently. We must take the heat out of the debate. We are far too polarized on the 1400 cubic meters of radioactive waste per year, while we forget the million cubic meters of toxic chemical waste. The fear of anything nuclear is irrational, supernatural, a nice subject for psychologists. We will have to study this issue without forgetting any avenues, including storage abroad. I have read that there are sites available in Australia."

Nuclear Research and Mol

Even though the path of supergenerators is being abandoned in several countries, including Great Britain, Mr Deworme remains cautious. He wants to continue the research program developed by Belgonucleaire in this area: "Their teams are far ahead of France. I would not want to dismantle high performance teams for transitory reasons and contribute to the brain drain."

And then there is Mol. The prime minister will chair an interdepartmental group in charge of drawing all possible conclusions from the parliamentary report on the

waste scandal but also from the consequences of Chernobyl. The need to maintain a national nuclear research center in Mol is obvious to Mr Deworme. "We can regionalize the nonnuclear activities in Mol and keep the nuclear activities national." But if Mol is to remain largely national, is it not surprising then that of the five individuals on the board of directors, only one is a French speaker and that Mr Claes is even thinking of replacing the French speaking national commissioner with a Flemish speaker? "Of course, you have to take into account the capabilities of each, and analyze that linguistic problem at the same time as the linguistic problem at INIEX, IRE and ONDRAF. But there may be a shortage of French speaking representation. We must be careful."

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SPAIN

Greenpeace Protests Nuclear Weapons on U.S. Ships

LD109180488 Madrid Domestic Service in Spanish
2130 GMT 31 Aug 88

[Text] The environmental group Greenpeace has denounced the presence in the port of Palma de Mallorca of 15 nuclear missiles, as well as other nuclear weapons for helicopters, on four ships belonging to the U.S. 6th Fleet.

[Reporter] Yesterday morning three ships of the U.S. 6th Fleet arrived at the West Dock in the port of Palma de Mallorca: the Daniels, the Truett, and the Sphinx. They were joined this morning by two others—the Guam and the Charleston. All but the Sphinx carry nuclear weapons, and the environmental organization Greenpeace has denounced this situation, believing that the Spanish Government has broken the promise it made during the NATO referendum. A fuller report from Joan Caimari in Palma de Mallorca:

[Caimari] According to the denunciation issued today by the environmental organization Greenpeace, there are at least 15 nuclear missiles on the four [as heard] ships of the U.S. 6th Fleet that anchored in the port of Palma de Mallorca yesterday. These are six ASROC antisubmarine missiles and a further nine Terrier surface-to-air missiles, all of them fitted with nuclear warheads. The Balearics Marine Command, which has confirmed the presence of these ships in the port, has, however, said that it does not know of the existence of these armaments, not having been informed on this point. According to Greenpeace, these ships fail to observe what was laid down in the NATO referendum. The organization has also said that Spanish ports do not have a nuclear emergency plan for possible accidents.

[Reporter] The visit of the U.S. Navy Fleet—consisting of a helicopter carrier, a support ship, a cruiser and a frigate—in the Mallorcan port coincided with a visit by

three Soviet tourist cruise ships. Curiously, the arrival of this kind of Soviet luxury ship usually coincides with the presence of important U.S. naval contingents in the port of Palma.

TURKEY

Storage Location of Radioactive Tea Will Be Secret

51002456 Istanbul CUMHURIYET in Turkish
12 Jul 88 p 14

[Text] It has been learned that nearly 60 thousand tons of 1986 crop tea that is held in Caykur's 47 different storages and determined to be destroyed will be collected in 2-3 locations belonging to Caykur.

Associate Professor Dr Atilla Ozmen, the head of Prime Ministry's Turkish Atomic Energy Agency, following his study tour in Trabzon and its surroundings, announced that, in order for Caykur to be able to continue production and meet storage requirements, the radioactive tea scattered in 45 different storages between Trabzon and Hopa will be collected in "2-3 locations."

Without revealing the locations of the storages, Ozmen indicated that the radioactive tea will be under "strict radiological and physical protection." Ozmen said that 5 thousand tons of radioactive tea, kept in Caykur's storage in Elmadag, Ankara, and 5 thousand tons of radioactive tea in Istanbul, Buyukdere storage, will be taken under control in the Turkish Atomic Energy Agency facilities.

Saying that the necessary research, measurements, and controls have already been conducted in the locations where the tea will be transported, and that these locations are outside the settlement districts, the President of the TAEA, Ozmen, added the following:

"Experiments have been conducted. There will be strictly no leakage. Recent research indicates that the tea, even in its current condition, is not posing a threat and is rapidly losing its activity. By no means will it pose a threat to anyone in the determined locations. Transportation preparations are under way. The precautions we will take will provide better security in a fixed location".

Prof Dr Ozmen said that the ultimate solution will be reached by finding a 10-to-15-thousand-donum location where radioactive materials of this sort can be dumped. Explaining that this method was implemented because such a location could not be found in one year, Ozmen further added that, in the event that a location can be found, the tea can be transported if necessary. Pointing out that the construction of a nuclear power plant is still on the agenda, Prof Dr Atilla Ozmen said that the Government is ready for a proposal if it comes as a build-operate-transfer model.

Prof Dr Ozmen indicated that Turkey will eventually have to enter the nuclear energy arena and that it found this inevitable.

Pointing out that the alternative energy sources will not be sufficient to close the energy gap between us and the developed nations, Ozmen continued:

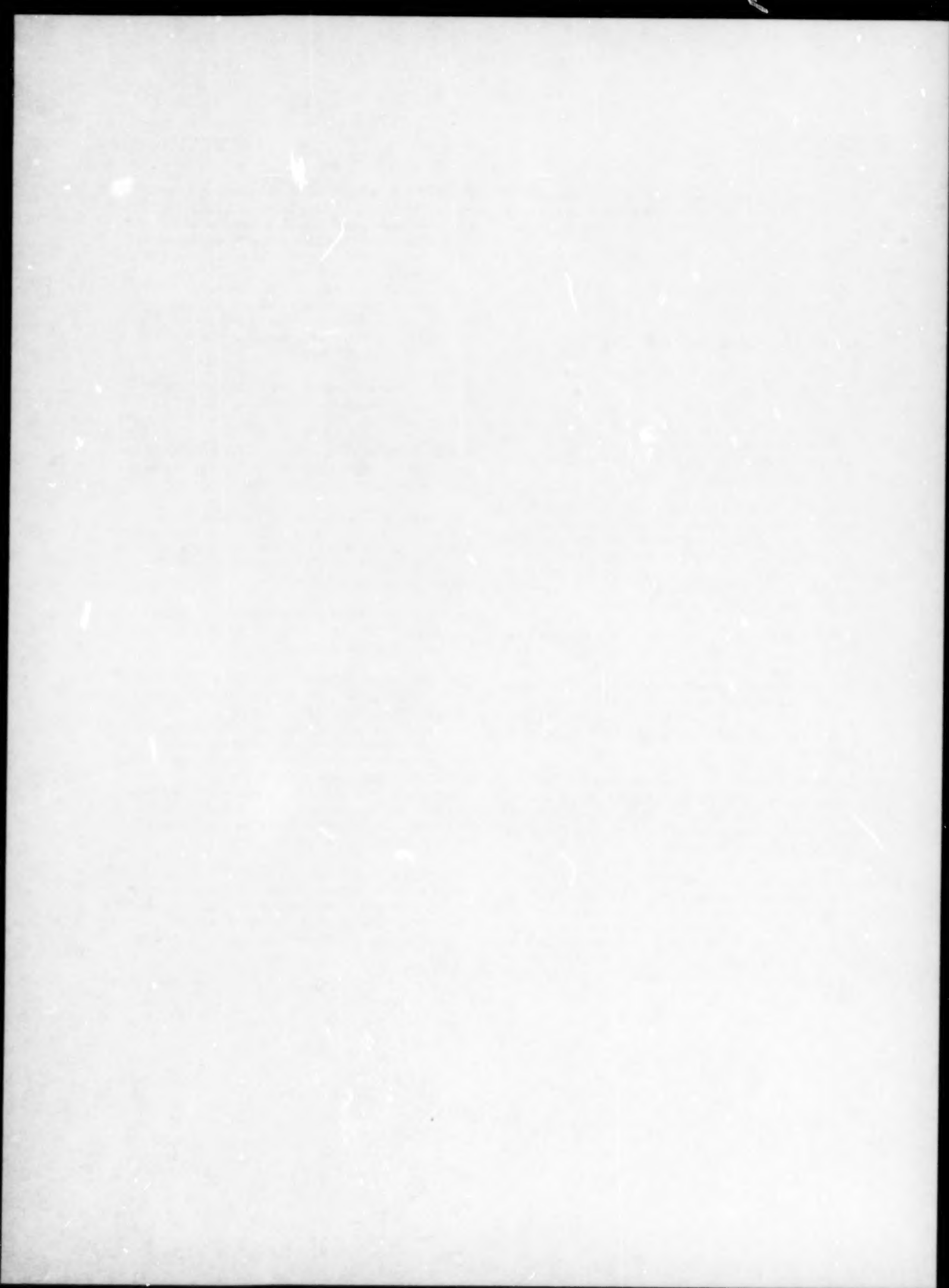
"According to 1985 figures, per capital electricity consumption in Turkey is 750 kilowatt hours. This figure is 3,500 in Greece, 11,000 in America, 14,000 in West Germany, and 12,000 kilowatt hours in France. This gap cannot possibly be closed otherwise."

Ozmen explained that the most productive energy source is nuclear energy and that it is not any more risky compared to other energy sources.

Prof Dr Ozmen reminded that, following the start of work on the nuclear power plant in 1975, the Canadian Atomic Energy Firm (AECL) and the KWU firm from West Germany held meetings with the Turkish Electricity Administration (TEK). Indicating that the construction of the nuclear power plant was postponed because some of the firms were unable to provide the necessary financing, Ozmen said, "These issues were hanging in the air totally because there was no agreement on financing. Now a French firm (Framatome) has accepted the build-operate-transfer formula."

Noting that the location selection for the nuclear power plant has been completed and two regions in Akkuyu and Sinop have been determined, Ozmen indicated that the first plant is planned to be built in Akkuyu and that the infrastructure and port constructions are under way.

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